

METRIC AND U.S. UNIT CONVERSIONS

Both metric and U.S. equivalent units have been used in this curriculum, as appropriate to the issues being discussed. For example, inventories of spent fuel are routinely reported in the United States in terms of metric tons,* even though most Americans are familiar with the short ton (2,000 pounds). Classroom experiments are usually conducted using metric units as well. Yet the standards and tests for spent fuel transportation casks are written using temperature in degrees Fahrenheit, miles per hour, and other similar units.

While the United States is working to increase its use of the metric system, both systems will be used during the transition period. To familiarize yourself with potentially unfamiliar metric units, conversion charts are provided here. Use Table 1 to convert a metric unit into its U.S. equivalent. To convert an U.S. unit into its metric equivalent, use Table 2.

For example, using Table 1 to convert 1,000 kilograms into its equivalent in pounds, multiply by 2.205 to get 2,205 pounds ($1,000 \text{ kg} \times 2.205 \text{ lb/kg} = 2,205 \text{ lb}$). Alternately, using Table 2, 2,000 pounds is equivalent to 907.2 kilograms ($2,000 \text{ lb} \times 0.4536 \text{ kg/lb}$).

* One metric ton is equal to 1,000 kilograms (or 2,205 pounds).

Table 1. Approximate Conversions from Metric to English Units

If you know...

Length	multiply by	to get
millimeters (mm)	0.03937	inches (in)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.3937	inches (in)
meters (m)	39.37	inches (in)
meters (m)	3.281	feet (ft)
meters (m)	1.094	yards (yd)
kilometers (km)	3,281.0	feet (ft)
kilometers (km)	0.5396	nautical miles (mi)
kilometers (km)	0.6214	statute miles (mi)
Area		
hectares (ha)	2.471	acres
hectares (ha)	1.076 X 10 ⁵	square ft (ft ²)
Weight (mass)		
grams (gm)	0.03527	ounces (oz)
grams (gm)	0.002205	pounds (lb)
kilograms (kg)	2.205	pounds (lb)
metric tons (t)	1.102	short tons
metric tons (t)	0.984	long tons
Pressure		
kilopascals (kPa)	6.9	pounds/square inch (lb/in ²)
Volume		
cubic centimeters (cm ³)	0.06202	cubic inches (in ³)
cubic meters (m ³)	3.531	cubic feet (ft ³)
cubic meters (m ³)	1.307	cubic yards (yd ³)
liters (L)	2.113	pints* (pt)
liters(L)	0.2642	gallons* (gal)
Temperature		
Celsius	9/5, [then add 32]	Fahrenheit
Electric Current		
ampere (A)	1	ampere (A)
Energy, Work, Heat		
joule (J)	9.480 x 10 ⁻⁴	BTU
Power		
watt (W)	1	watt (W)
watt (W)	3.4129	BTU per hour
watt (W)	1.341 x 10 ⁻³	horsepower

Common Prefixes for Metric Units:

mega = million = 10⁶

kilo = thousand

hecto = hundred

deka = ten

deci = one-tenth

centi = one-hundredth

milli = one-thousandth

micro = one-millionth

Examples:

kilogram = 1,000 grams

milliliter = 1/1,000 liter

*liquid measure

Table 2. Approximate Conversions from English to Metric Units

If you know...

Length	multiply by	to get
inches (in)	2.54	centimeters (cm)
feet (ft)	30.48	centimeters (cm)
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
yards (yd)	0.9144	meters (m)
Area		
square inches (in ²)	6.5	square centimeters (cm ²)
square feet (ft ²)	0.09	square meters (m ²)
square yards (yd ²)	0.8	square meters (m ²)
acres	0.4047	hectares (ha)
square miles (mi ²)	2.6	square kilometers (k ²)
Weight (mass)		
ounces (oz)	28.349527	grams (gm)
pounds (lb)	0.4536	kilograms (kg)
tons (long)	1.016	metric ton (t)
Pressure		
pounds per square inch	70.31	grams per square centimeter
pounds per square inch	0.145	kilopascals
Volume		
cubic feet (ft ³)	0.02832	cubic meters (m ³)
cubic inches (in ³)	16.387	cubic centimeters (cm ³)
cubic yards (yd ³)	0.765	cubic meters (m ³)
gallons* (gal)	3.785	liters (L)
pints* (pt)	0.473	liters (L)
quarts* (qt)	0.946	liters (L)
Temperature		
Fahrenheit	[subtract 32, then multiply by 5/9]	Celsius
Electric Current		
ampere (A)	1	ampere (A)
Energy, Work, Heat		
BTU	1,055	joules (J)
Power		
watt (W)	1	watt (W)
BTU per hour	0.293	watt (W)
horsepower	745.712	watt (W)

*liquid measure